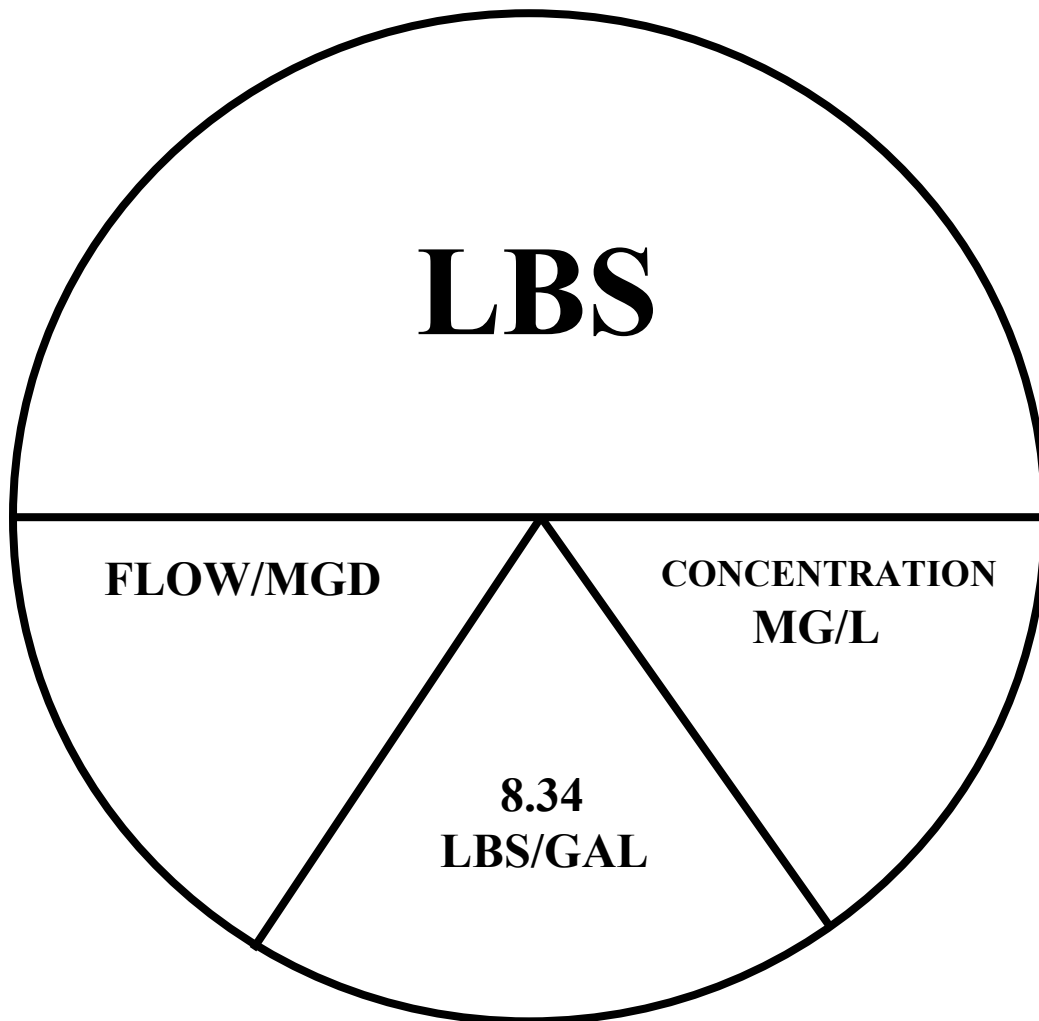


FORMULA & CONVERSION SHEET - COLLECTION SYSTEM

<u>CONVERSIONS</u> 1 psi = 2.31 ft. of head 1 ft. of head = 0.433 psi 1 cu ft of water = 7.48 gallons 1 cu ft of water = 62.4 lbs. 1 gallon = 8.34 lbs. 1 gallon = 3,785 ml 1 Liter = 1,000 ml 1 mg/L = 8.34 lbs/MG 1 ppm = 1 mg/L 1 ml = 1 gram 1 pound = 453.6 grams 1 kilogram = 1,000 grams 1 HP = 0.746 kilowatt 1 cubic yard = 27 cubic feet		<u>FLOW AND VELOCITY</u> "Q" = FLOW expressed in cubic ft per sec. (cfs) "V" = VELOCITY expressed in ft per second (fps) "A" = AREA expressed in square feet (sq ft) Q = A x V V = Q ÷ A A = Q ÷ V Standard Design Criteria 0.17 lbs BOD ₅ per person/day 0.20 lbs TSS per person/day 0.0048 lbs phosphorus per person/day 100 gal per person/day		SLOPE = $\frac{\text{FALL IN FEET}}{\text{LENGTH IN FEET}}$ PERCENT GRADE = $\frac{\text{RISE IN FEET}}{\text{RUN IN FEET}} \times 100$ VELOCITY = $\frac{\text{DISTANCE TRAVELED IN FEET}}{\text{TIME REQUIRED IN SECONDS}}$ DIFFERENCE IN ELEVATION = GRADE x PIPE RUN IN FT PUMP RATE/GPM = (INFLUENT RATE) – (RISE RATE WITH PUMP RUNNING) PUMP RATE/GPM = $\frac{\text{VOLUME}}{\text{TIME}}$ PERCENT FLOW = $\frac{\text{ACTUAL FLOW}}{\text{AVERAGE FLOW}} \times 100$ DETENTION TIME = $\frac{\text{VOLUME (GALS)}}{\text{FLOW (GPM)}}$ KILOWATTS = HORSEPOWER x 0.746 KILOWATT HOURS = KILOWATTS USED x HRS OPERATED POWER COST = KILOWATT HRS USED x COST/KILOWATT HR	
<u>OBJECT</u> Rectangle Circle Triangle Cylinder Sphere	<u>AREA (ft²)</u> Length' x Width' .785 x D' x D' 1/2 (Base' x Altitude')	<u>VOLUME (ft³)</u> Length' x Width' x Height' .785 x D' x D' x Length' .5236 x D' x D' x D'			
Diameter (D) = 2 x Radius			Circumference = 3.1416 x D		Perimeter = Sum of all sides



$$\text{LBS/day} = \text{Flow/MGD} \times 8.34 \times \text{Concentration mg/L}$$

$$\text{Concentration mg/l} = \text{LBS/day} \div \text{Flow/MGD} \times 8.34$$

$$\text{Flow/MGD} = \text{LBS/day} \div \text{Concentration mg/L} \times 8.34$$